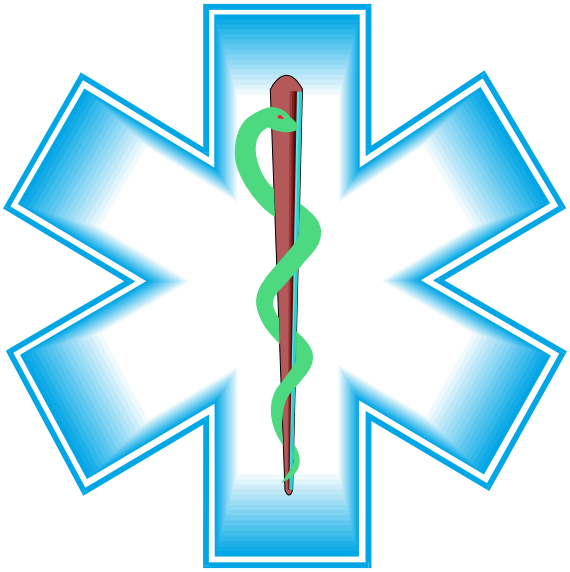
Tuolumne County
Emergency Medical Services Agency

2012 Annual Statistical Report



February 27, 2013

Prepared by: Clarence I. Teem, MS, EMT-P, EMS Coordinator
Tuolumne County Emergency Medical Services Agency
20111 Cedar Road North, Sonora California 95370 (209) 533-7460

Table of Contents

INTRODUCTION……..…..1

OVERVIEW OF CALL VOLUME ……....3

CALLS BY TYPE…. ……....4

LEVEL OF CARE/RESPONSE TIMES……6

PATIENT AND HOSPITAL DATA……..….7

EMS PATIENT DEMOGRAPHICS ……10

TRAUMA SYSTEM……...11

S-T ELEVATION MYOCARDIAL INFARCTION (STEMI)……...13

ADVANCED LIFE SUPPORT MEDICATIONS……14

INFREQUENTLY USED ALS SKILLS……17

SUMMARY……....18

INTRODUCTION

The 2012 Annual Statistical Report compiles and condenses an entire year's worth of data (call volume, response time and patient demographic information) about the Tuolumne County EMS system. The data included in this report is derived from pre-hospital patient care records (PCRs) completed by Tuolumne County Ambulance Service personnel, unless otherwise noted.

Since July 1, 1993, Tuolumne County Ambulance has collected PCR data using the software program EMS DataPro® (formerly the EMS Database System) provided for their use by the Tuolumne County EMS Agency. Once entered in EMS DataPro®, the data is submitted in an electronic format to the Tuolumne County EMS agency where the data is imported into a central version of EMS DataPro®. The EMS agency then validates the data.

In September 2000, Tuolumne County Ambulance, with the assistance of the EMS agency, initiated a program for completing PCRs using EMS Outfielder® (a laptop based PCR data entry program developed by CompuCounsel, now called Inspironix, of Sacramento in conjunction with Manteca District Ambulance). EMS Outfielder® has replaced hand-written PCR forms and billing tickets. EMS Outfielder® provides immediate data availability for daily quality assurance/quality improvement reviews and imports patient billing information directly into the billing system used by Tuolumne County Ambulance.

The Tuolumne County Emergency Medical Services (EMS) System is comprised of four 9-1-1 answering points including Tuolumne County Sheriff's Dispatch, City of Sonora Police Department Dispatch, CHP Dispatch (located in Merced County) and Mariposa County Sheriff's Dispatch.

- Ambulance dispatching is provided by the Tuolumne County Sheriff's Dispatch Center.
- Basic life support (BLS) first response services are provided by Tuolumne County Fire Dept., Tuolumne City Fire Dist., Columbia College Fire Dept., Twain Harte Fire Dist., Columbia Fire Dist., Sonora City Fire Dept., Miwuk-Sugarpine Fire Dist., and the Groveland Fire Dist.
- U.S. Forest Service, Tuolumne County Sheriff's Search and Rescue, Don Pedro Recreation Agency, Dodge Ridge Ski Patrol provides specialized BLS response services.
- Tuolumne County Ambulance Service provides advanced life support (ALS) service. Mercy Medical Transport from Mariposa County provides the Lake Don Pedro area ALS Ambulance service.
- PHI provides air ambulance services with day-to-day mutual aid from the California Highway Patrol (CHP) Air Operations Division, Air Methods, CALSTAR and R.E.A.C.H. Air Ambulances.

In June 2003, grant funds were made available to the Tuolumne County EMS Agency for the purpose of purchasing and installing EMSystem™ communication software and related computer hardware for the emergency departments of Tuolumne General

Hospital and Sonora Regional Medical Center and the EMS agency office. In early 2004, EMSystem™ linked Tuolumne County's EMS system with the other ten (10) counties of OES Region IV, enabling Tuolumne General Hospital, as the county's Disaster Control Facility, to view real-time emergency department availability when determining patient disbursement during a multi-casualty incident (MCI).

In 2004, The Tuolumne County Emergency Medical Services System developed and implemented a Trauma Plan, in conjunction with Memorial Medical Center, Doctors Medical Center of Modesto, Mountain Valley EMS Agency, El Dorado County EMS Agency, Central California EMS Agency, Northern California EMS Agency, Sacramento County EMS Agency, and Santa Barbara County EMS Agency. The Trauma Plan provides a framework that assures that the citizens and visitors of Tuolumne County receive comprehensive prehospital and hospital trauma care. Tuolumne County relies on Trauma Centers throughout Northern California for in-hospital trauma care. Air Ambulances are used as the primary means of transportation for patients meeting Tuolumne County's major trauma patient criteria.

In July 2007, Tuolumne General Hospital closed leaving only one acute care hospital in Tuolumne County. Sonora Regional Medical Center assumed the duties of the county's Disaster Control Facility and Mountain Counties South Control Facility.

In 2008, EMSystem was expanded to include data elements for the Department of Health and Human Services HAvBED (Hospital Available Beds for Emergencies and Disasters). This capability allows for accurate and consistent polling of hospital resources nationwide.

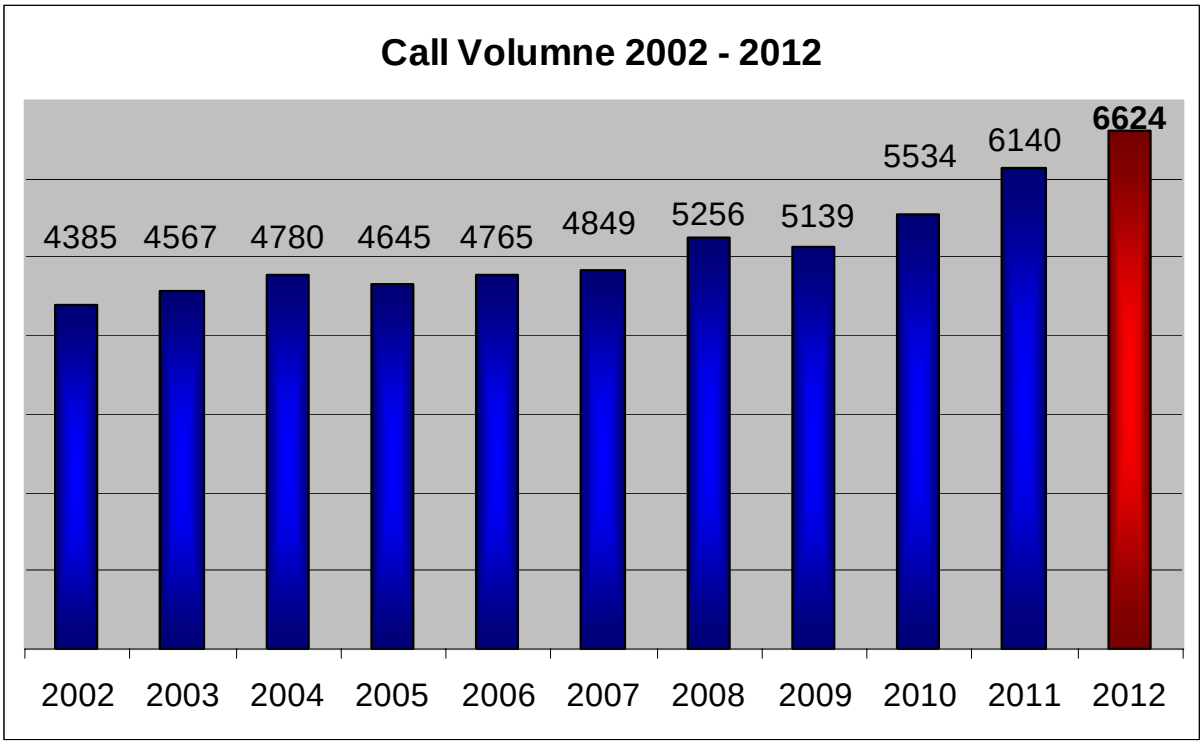
In June of 2009, Tuolumne County EMS Agency was instrumental in the development of the Central Regional Trauma Coordinating Committee (CRTCC), a twelve county regional committee. The purpose of the committee is to standardize and improve the provision of trauma care within the region. The CRTCC, working in coordination with four other Regional Trauma Coordinating Committees and the State EMS Authority to build a strong, cohesive statewide trauma system.

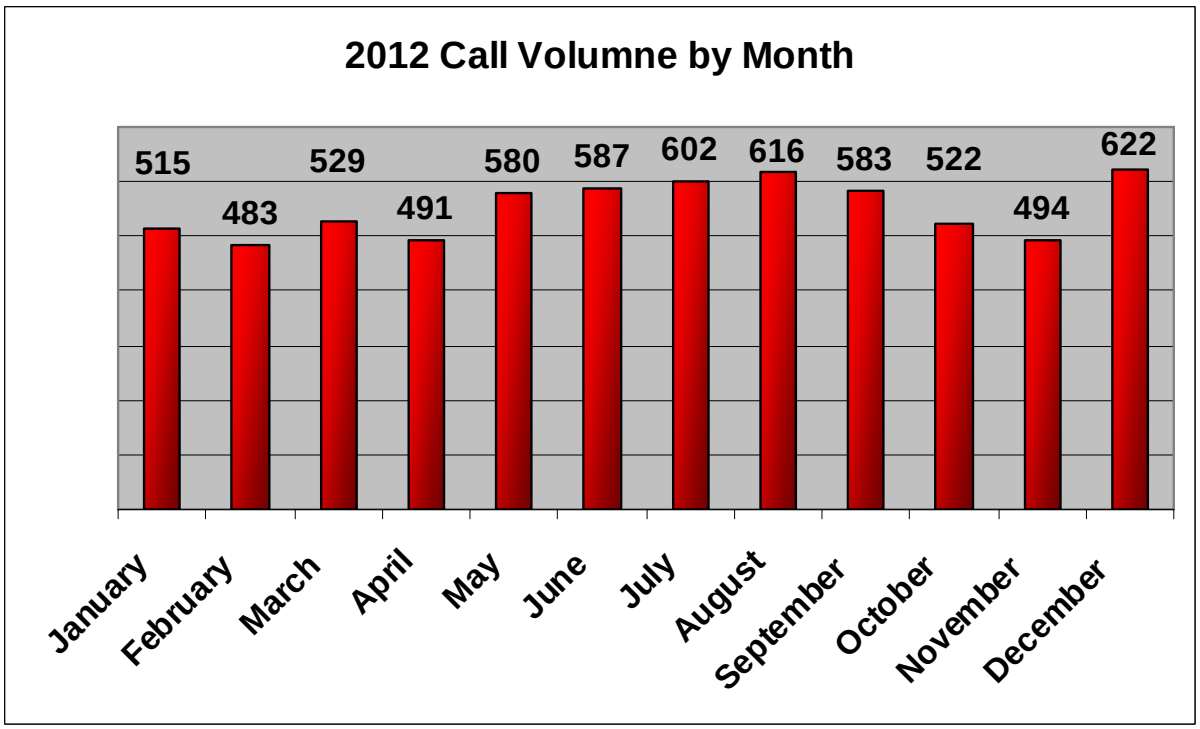
In 2010, Tuolumne County EMS implemented an S-T Elevation Myocardial Infarction (STEMI) triage policy. This allows Paramedics in the field to transport, usually by air ambulance, a patient experiencing a serious cardiac event to be transported directly to a hospital capable of Percutaneous Coronary Intervention (PCI). Decreasing the time from the recognition of a STEMI to PCI greatly decreases the injury to the cardiac muscle and increases the survival rate of these patients.

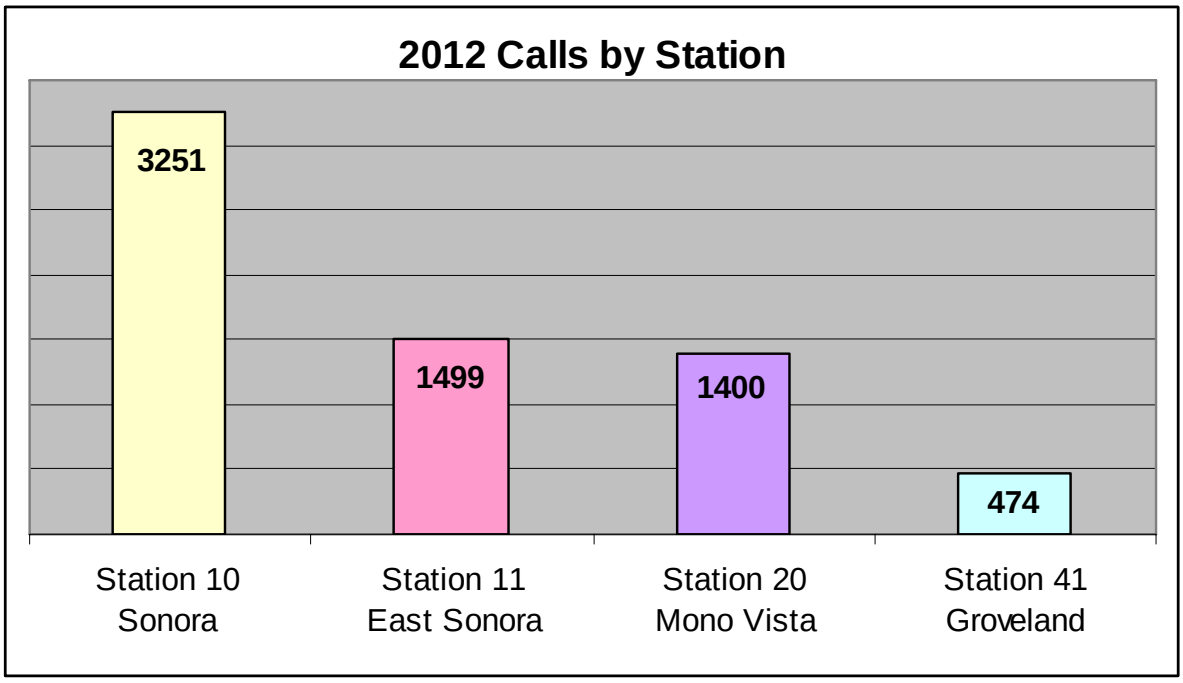
In September of 2011, Tuolumne County adopted the CRTCC Trauma Triage Criteria. This criteria is based on the Centers for Disease Control (CDC) trauma triage guidelines. Studies are underway, at the time of this report, to compare the efficacy of the previous and current Trauma Triage Criteria.

OVERVIEW OF CALL VOLUME

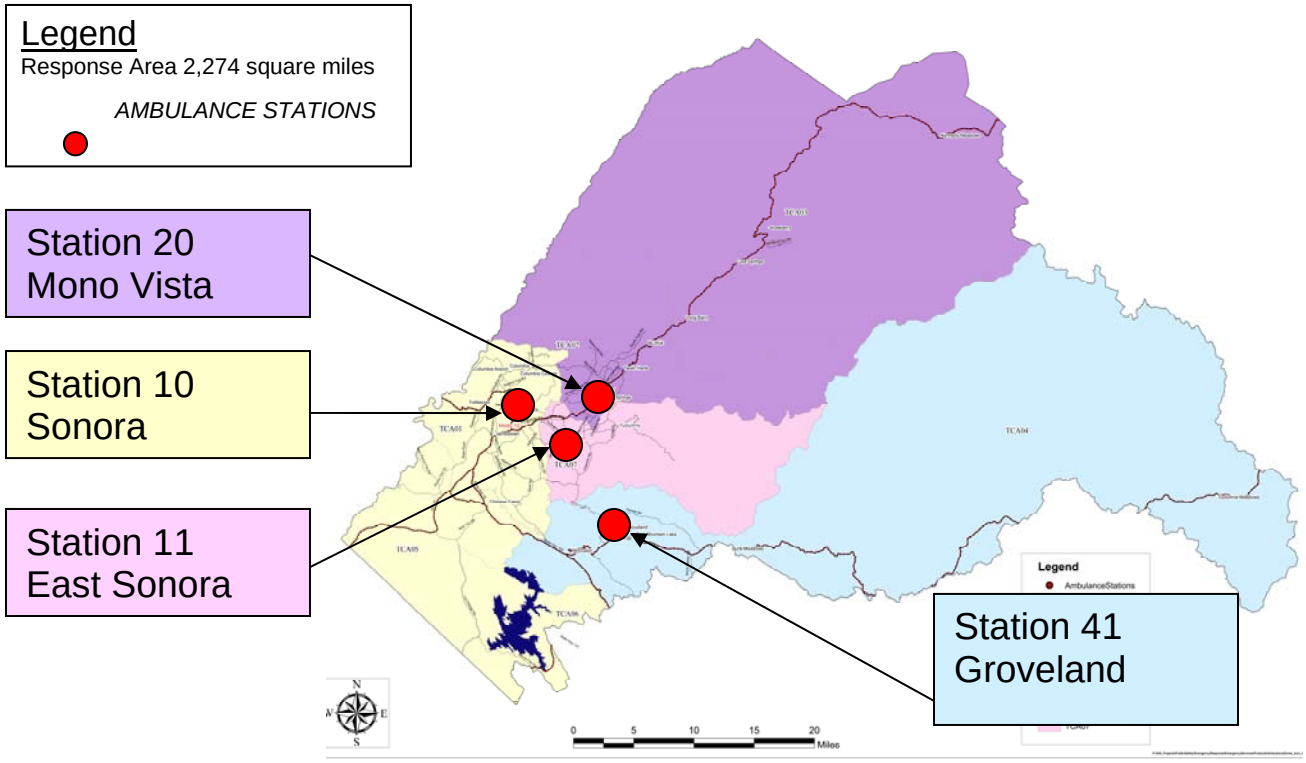
As illustrated in the graphs below, 2012 was the busiest year to date; in 2012 there was an 8% increase in calls for EMS services from 2011. Since 2002, there has been a 51% increase in the call volume. Unless otherwise specified EMS requests include both scene and transfer call types.

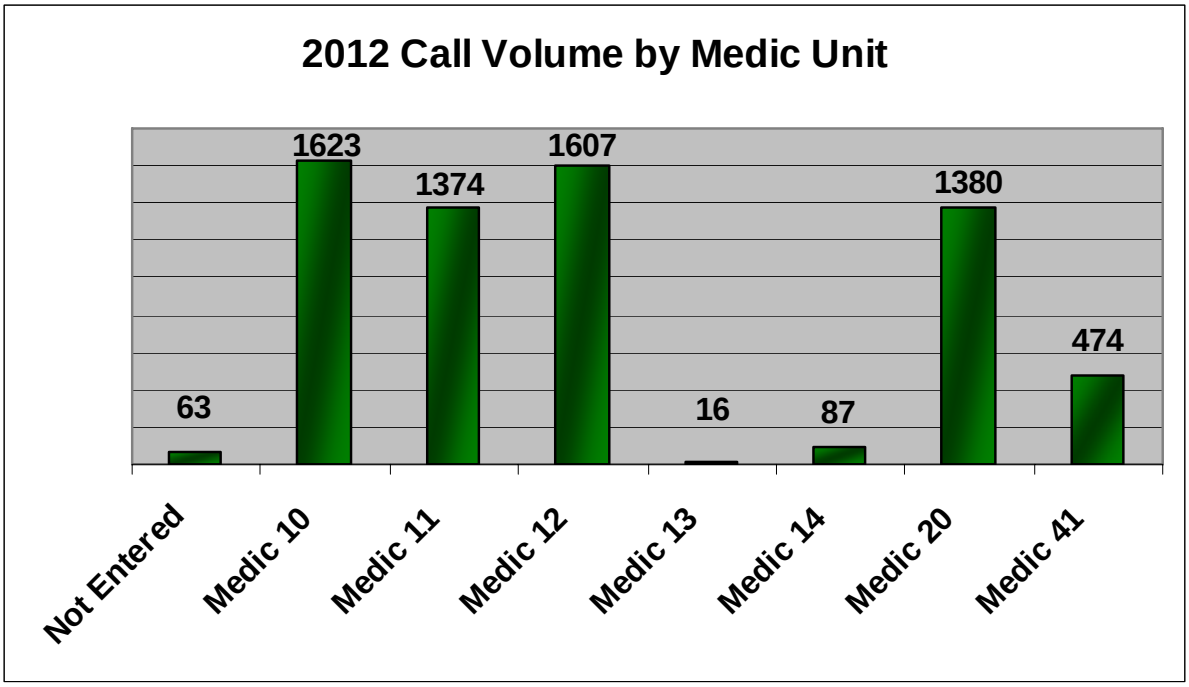


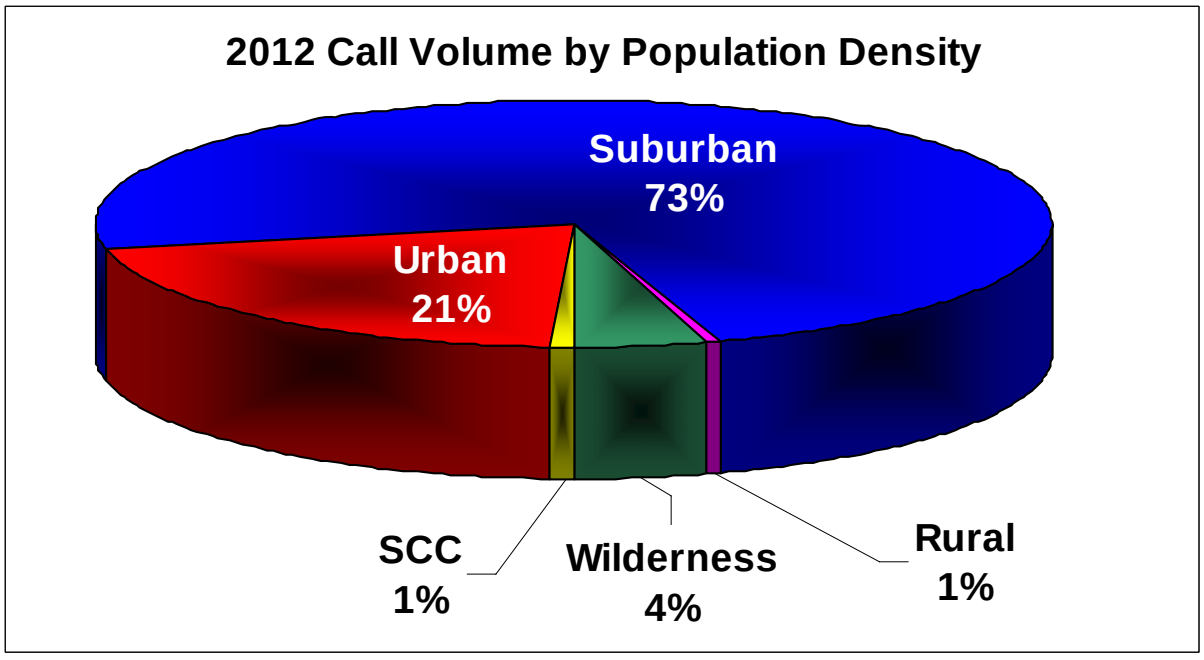




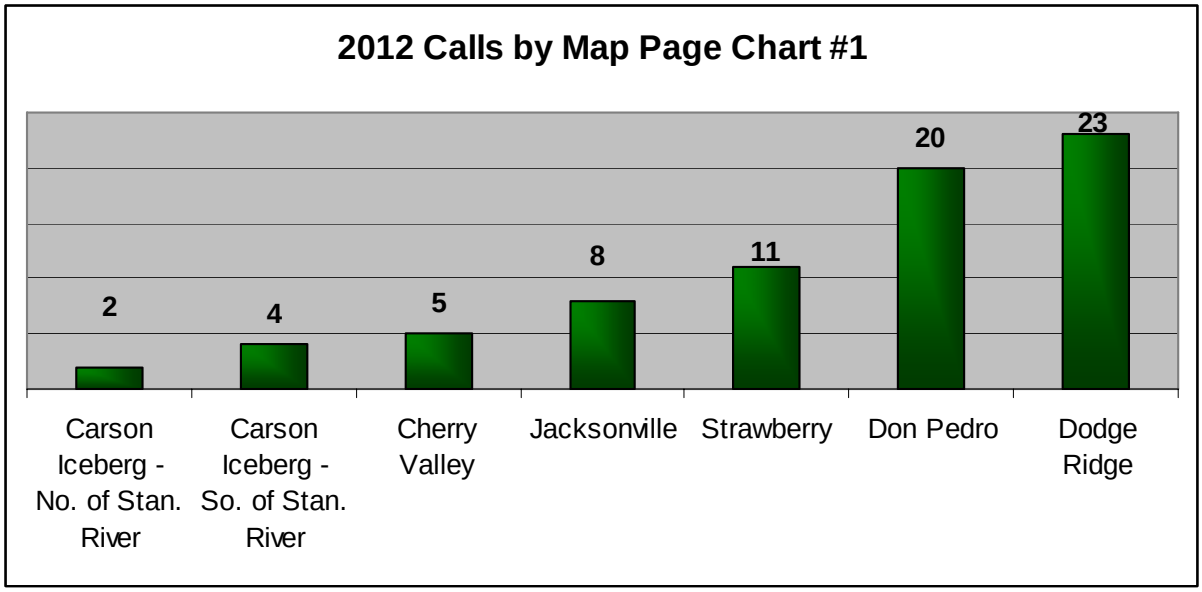
As illustrated above, Station 10 responded to the majority of all EMS requests.

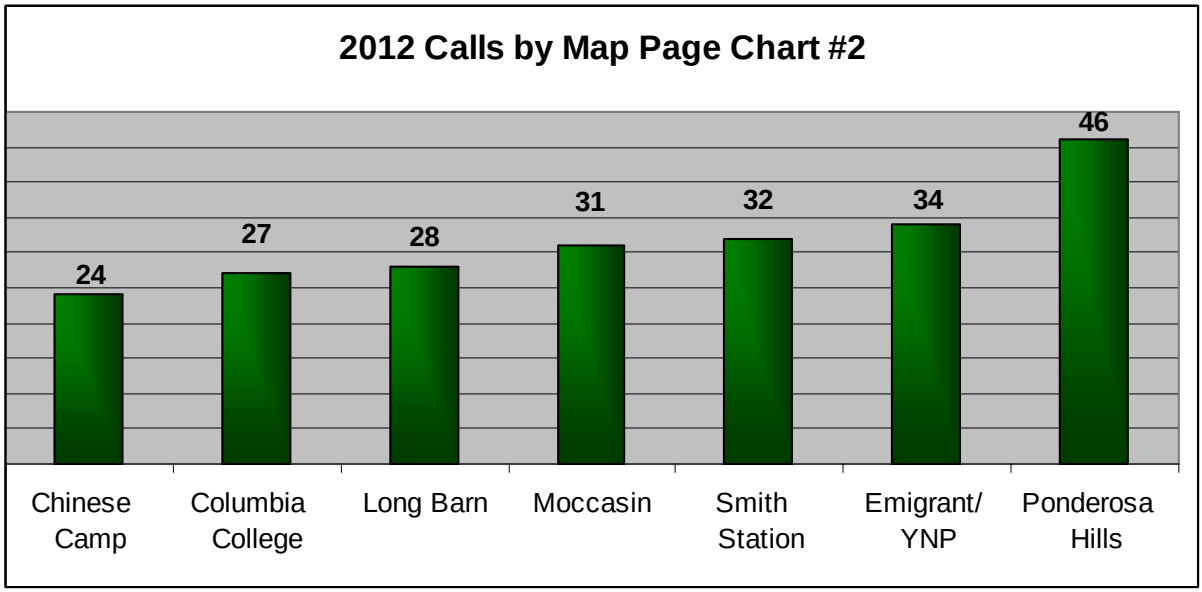


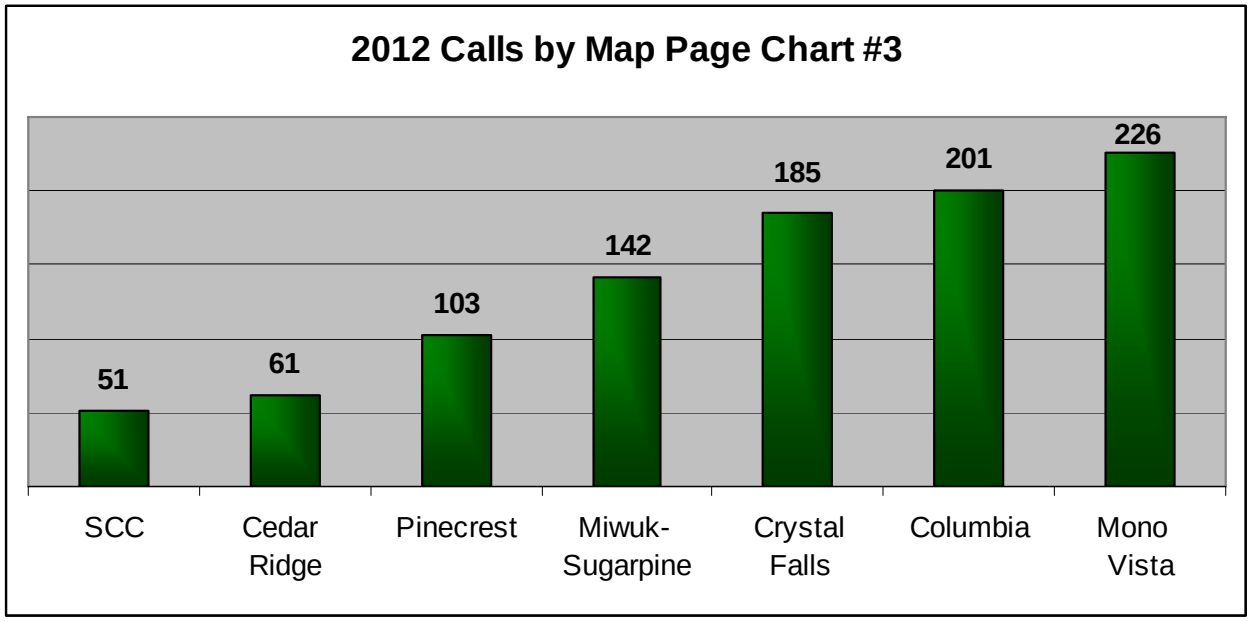


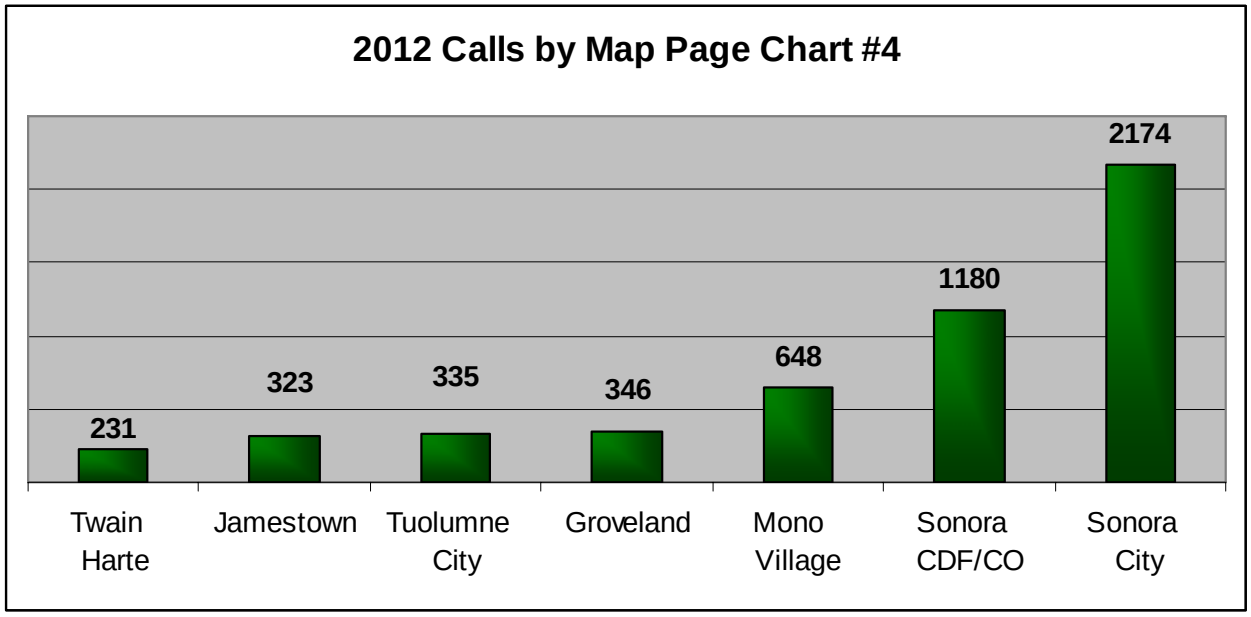


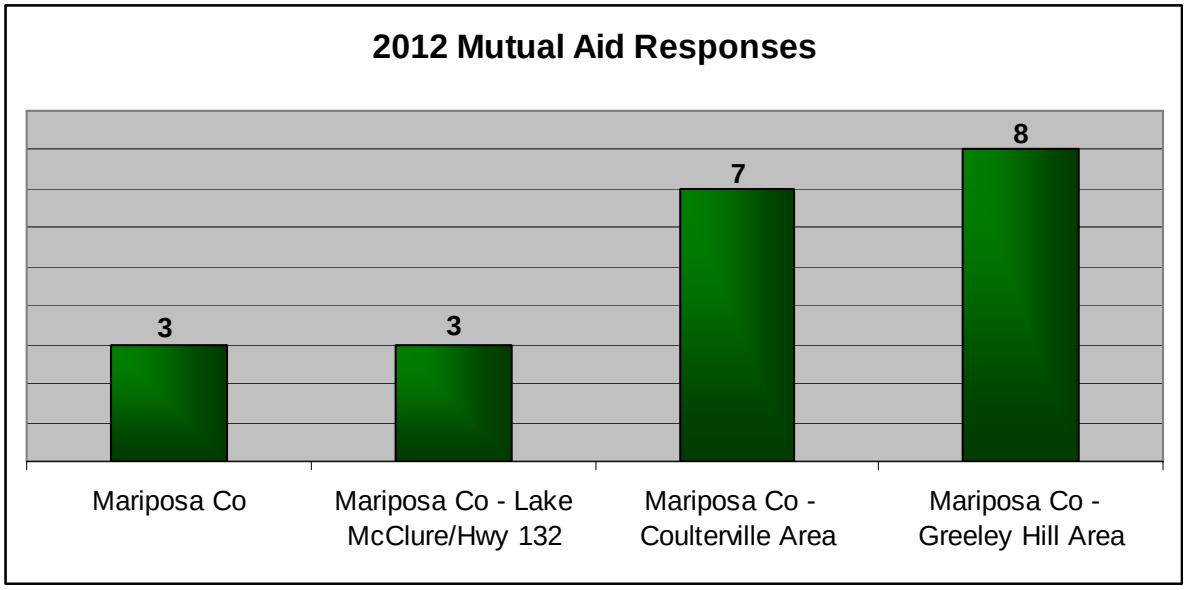
The breakdown of EMS requests by location reveals that the majority (73%) of requests occur in the suburban areas of Tuolumne County, where the majority of Tuolumne County residents live.


2012 Calls by Map Page Chart #1
2
4
5
8
11
20
23
Carson Iceberg - No. of Stan. River
Carson Iceberg - So. of Stan. River
Cherry Valley
Jacksonville
Strawberry
Don Pedro
Dodge Ridge

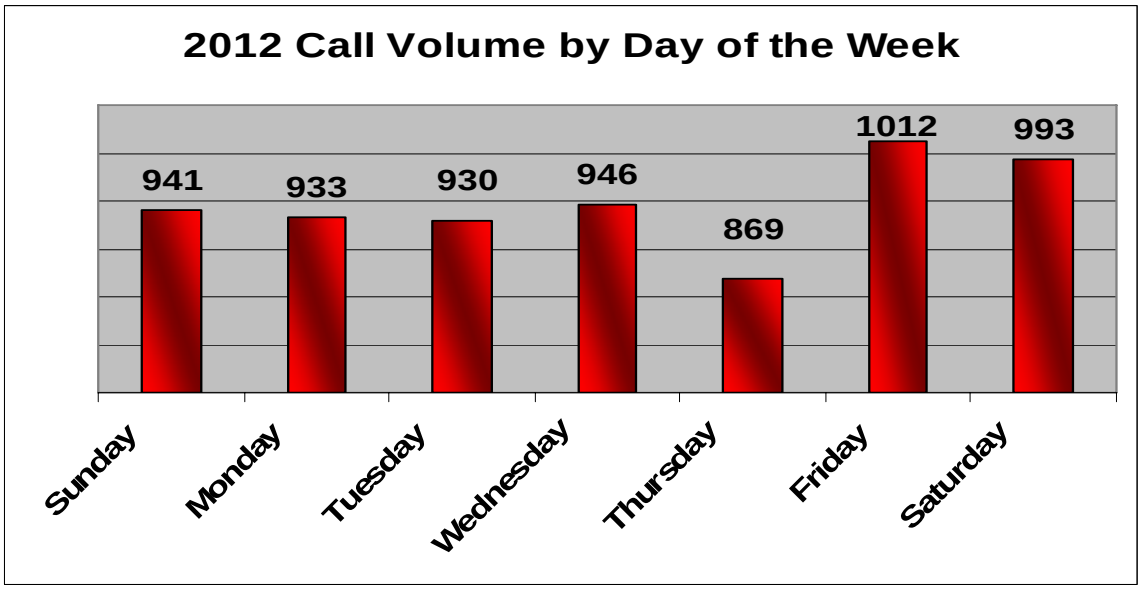

2012 Calls by Map Page Chart #2
24
27
28
31
32
34
46
Chinese Camp
Columbia College
Long Barn
Moccasin
Smith Station
Emigrant/ YNP
Ponderosa Hills


2012 Calls by Map Page Chart #3
51
61
103
142
185
201
226
SCC
Cedar Ridge
Pinecrest
Miwuk-Sugarpine
Crystal Falls
Columbia
Mono Vista


2012 Calls by Map Page Chart #4
231
323
335
346
648
1180
2174
Twain Harte
Jamestown
Tuolumne City
Groveland
Mono Village
Sonora CDF/CO
Sonora City

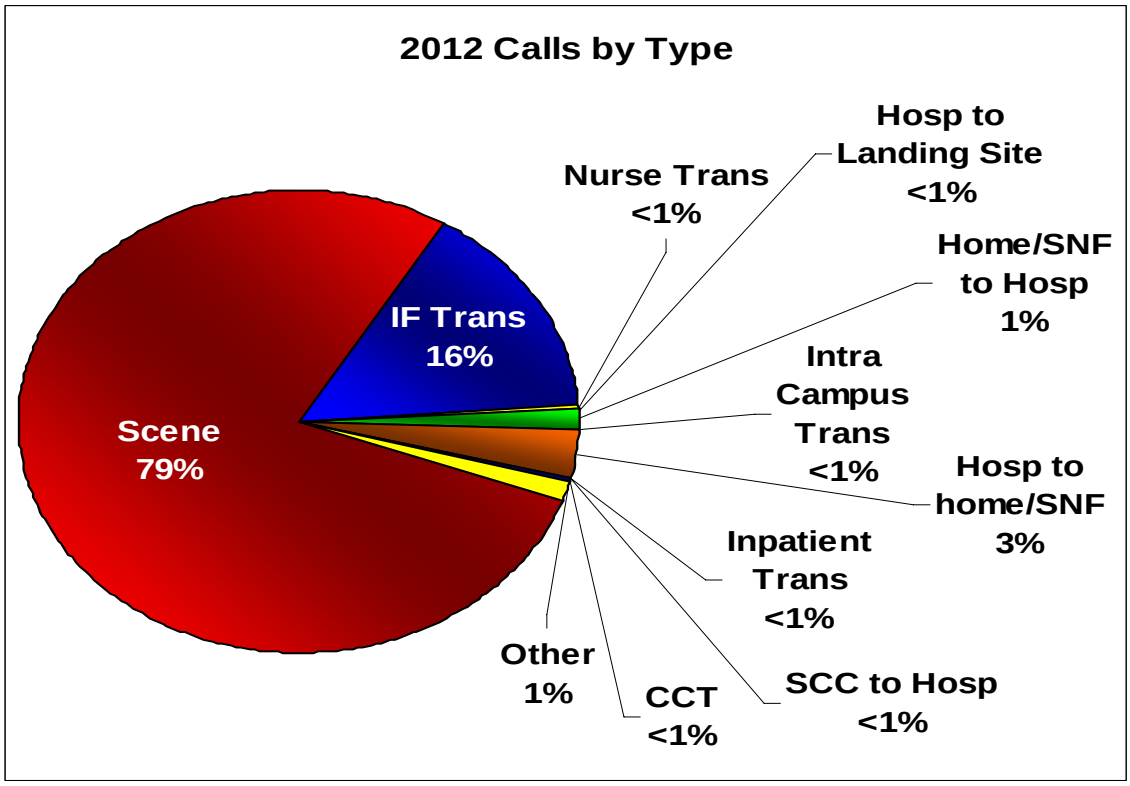


A breakdown of requests by day and time of day shows that call volumes may vary widely during the week, with the highest volumes on Fridays and Saturdays.

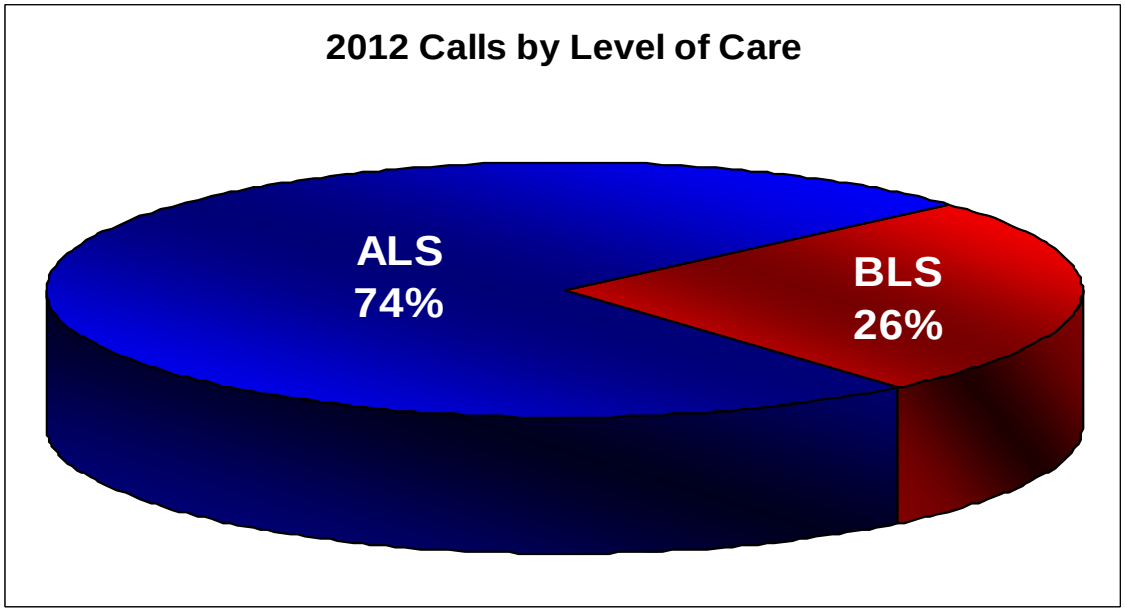


Calls by Type

In 2012, scene emergencies accounted for 79% of the total EMS requests for service. Transfers make up the remaining 21% of EMS requests for services. Interfacility Transfers (IFT) have increased by 2% over last year.



74% of all requests for service resulted in the delivery of advanced life support (ALS) procedures and/or medications administered to the patient.



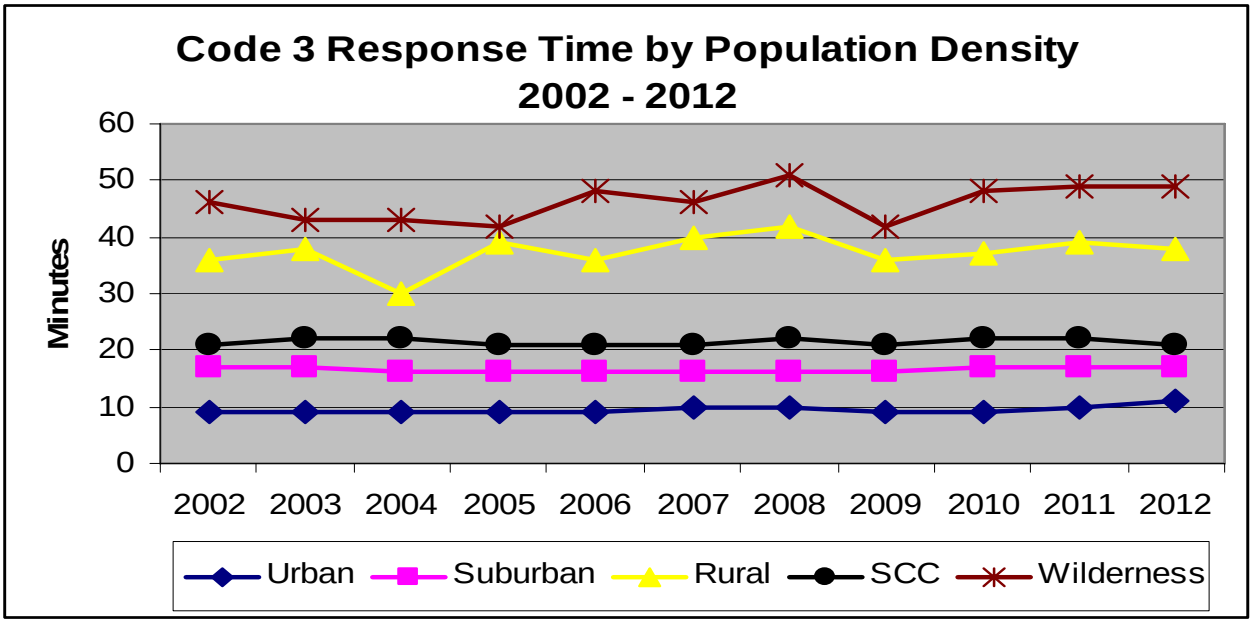
Response Times

The California Emergency Medical Services Authority (EMSA) has established recommended guidelines for Code 3 response time standards to EMS requests, based on population density. The EMSA recommends that EMS responses meet these response time guidelines at least 90% of the time.

	BLS 1st Response	BLS AED 1st Response	ALS Amb
Urban	5 minutes	5 minutes	8 minutes
Suburban	15 minutes	ASAP	20 minutes
Rural	15 minutes	ASAP	20 minutes
Wilderness	ASAP	ASAP	ASAP

Urban = 101 to 500 people per mile^2 ***Suburban*** = 51 to 100 people per mile^2
Rural = 7 to 50 people per mile^2 ***Wilderness*** = less than 7 people per mile^2
SCC = Sierra Conservation Center (secured facilities may be exempted from response time requirements)

	Urban	Suburban	Rural	SCC	Wilderness
Min:	0.00 mins	0.00 mins	1.00 mins	5.00 mins	2.00 mins
Max:	65.00 mins	76.00 mins	47.00 mins	30.00 mins	105.00 mins
Ave:	6.54 mins	10.67 mins	26.92 mins	16.71 mins	31.91 mins
90 %ile:	11.00 mins	17.00 mins	38.00 mins	21.00 mins	49.00 mins



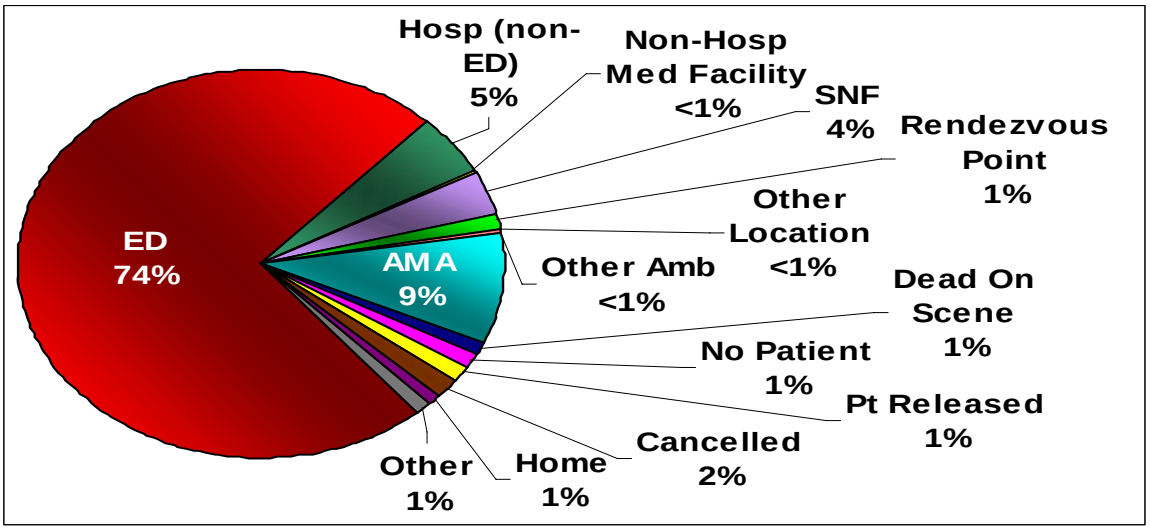
PATIENT AND HOSPITAL DATA

The chart below shows the patient distribution by receiving facilities, including transfers.

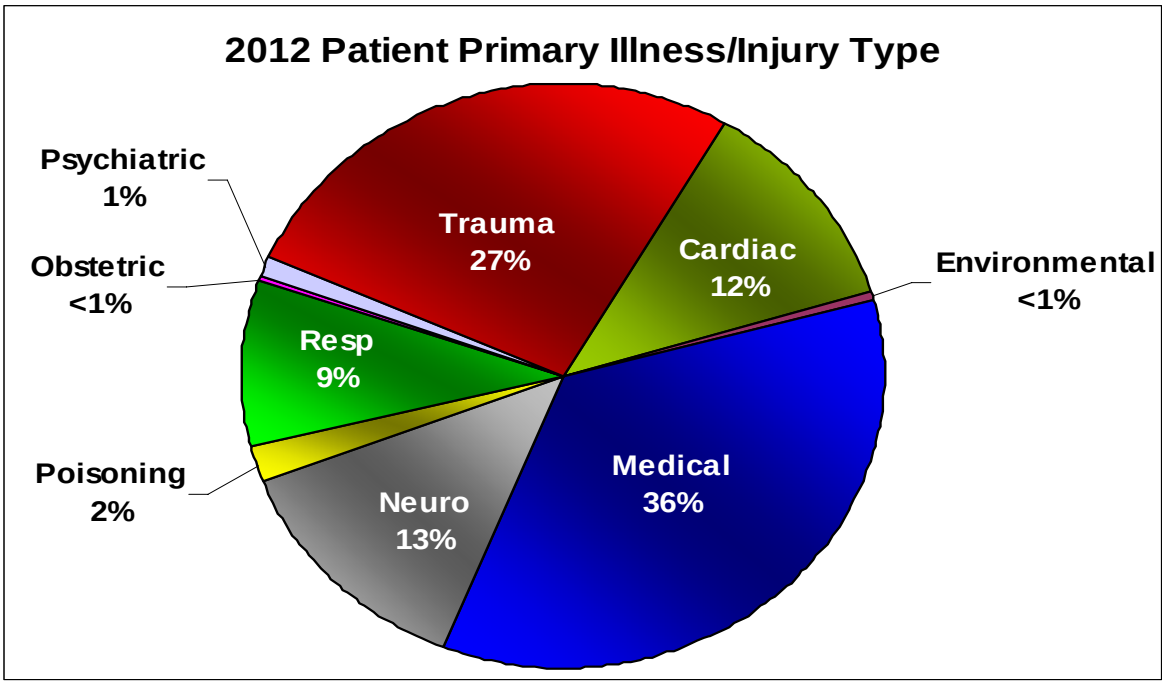
Sutter-Amador Hosp	1	Other Fresno Co. Hosp	3
Kaiser Medical Center Walnut Creek	1	Mercy Hosp, Merced	3
Contra Costa Co. Hosp	1	Mercy General Hosp	3
Clovis Community Hosp	1	Kaiser Hosp, Sacramento	4
Madera Community Hosp	1	Mercy San Juan Hosp	4
Central California Children's Hosp	1	Methodist Hosp of Sacramento	4
Kaiser Hosp, South Sacramento	1	Valley Children's Hosp	6
Sutter General Hosp	1	St Josephs Medical Center	8
Shriner's Hosp Sac	1	Lucile Packard Children's Hosp	8
Other San Francisco Co. Hosp	1	Other Santa Clara Co. Hosp	8
St Joseph's Behavioral Health	1	Kaiser Hosp of Manteca	10
Santa Clara Valley Med Center	1	VA Med Center Palo Alto	15
Other Santa Cruz Co. Hosp	1	San Joaquin General Hosp	18
Stanislaus Behavioral Health	1	U.C.S.F. Med Center	20
Other Alameda Co. Hosp	2	California Pacific Medical Center	23
Mt Diablo Hosp	2	Oakland Children's Hosp	28
Sutter Roseville Medical Center	2	Stanford University Hosp	28
Other Sacramento Co. Hosp	2	U.C. Davis Medical Center	37
Dameron Hosp	2	Modesto Rehab Hosp	115
Sequoia Hosp	2	Other Hosp Not Listed	120
San Jose Medical Center	2	MMC	144
Oak Valley Hosp	2	DMC	510
Mark Twain-St. Josephs	3	SRMC	4128

Call Disposition

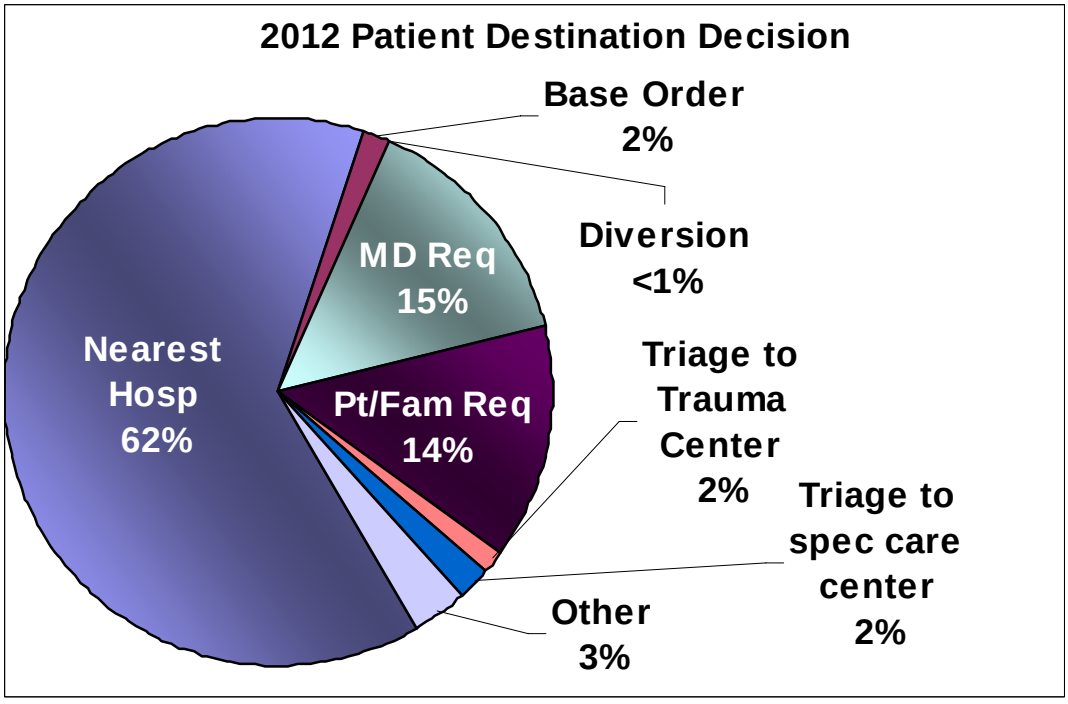
The table below illustrates that 74%, a 2% increase compared to 2011, of all requests for service resulted in the patient being transported to an emergency department.

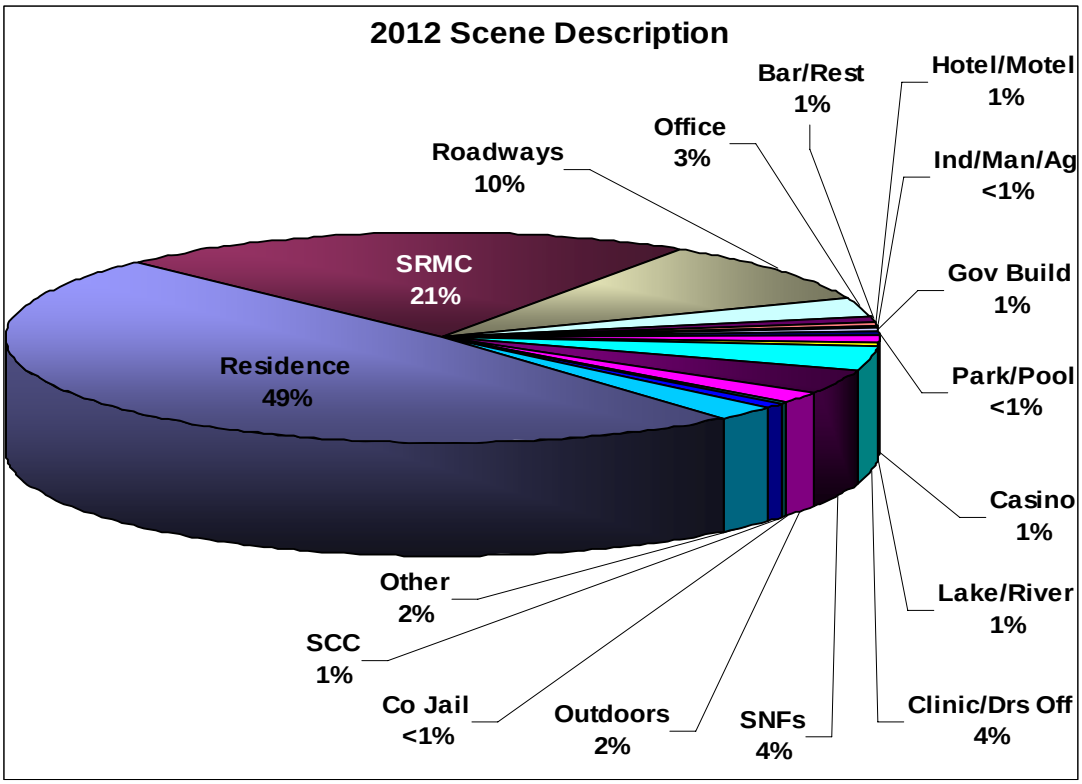


Poisoning/Overdose category does not differentiate between accidental and intentional ingestion or overdose. Nor does it differentiate between prescription and illicit drugs. Medication reactions and anaphylaxis are included in the Medical category.



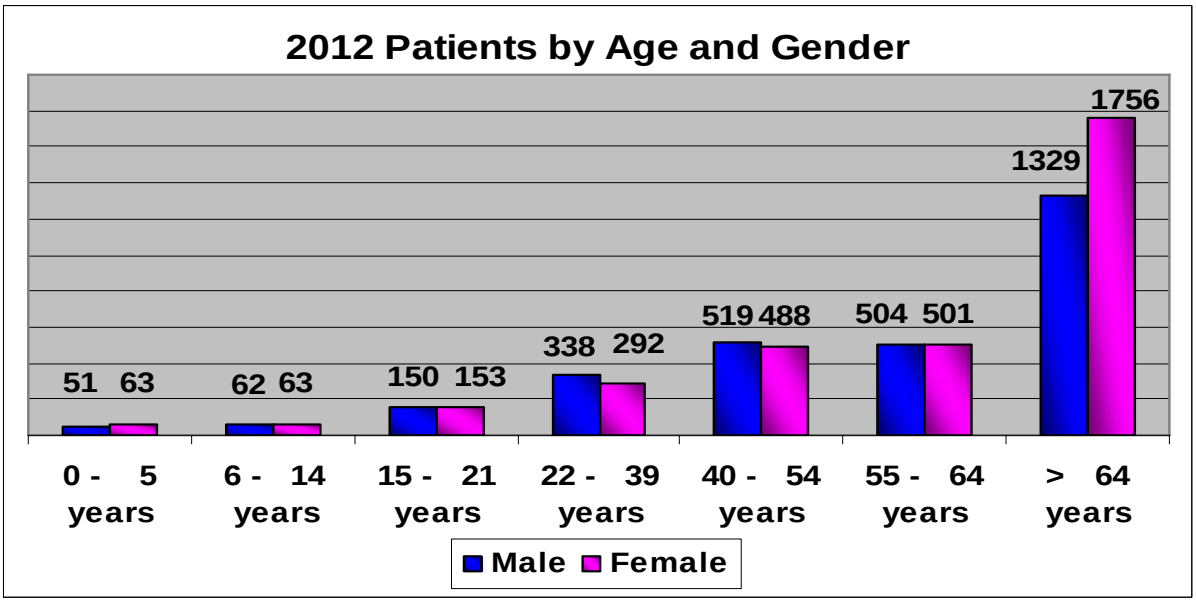
As shown in the chart below, for those patients transported to a hospital, approximately 62% of all transports are made to the nearest hospital and 14% of the patients were transported to the hospital of the patient's or family's choice.





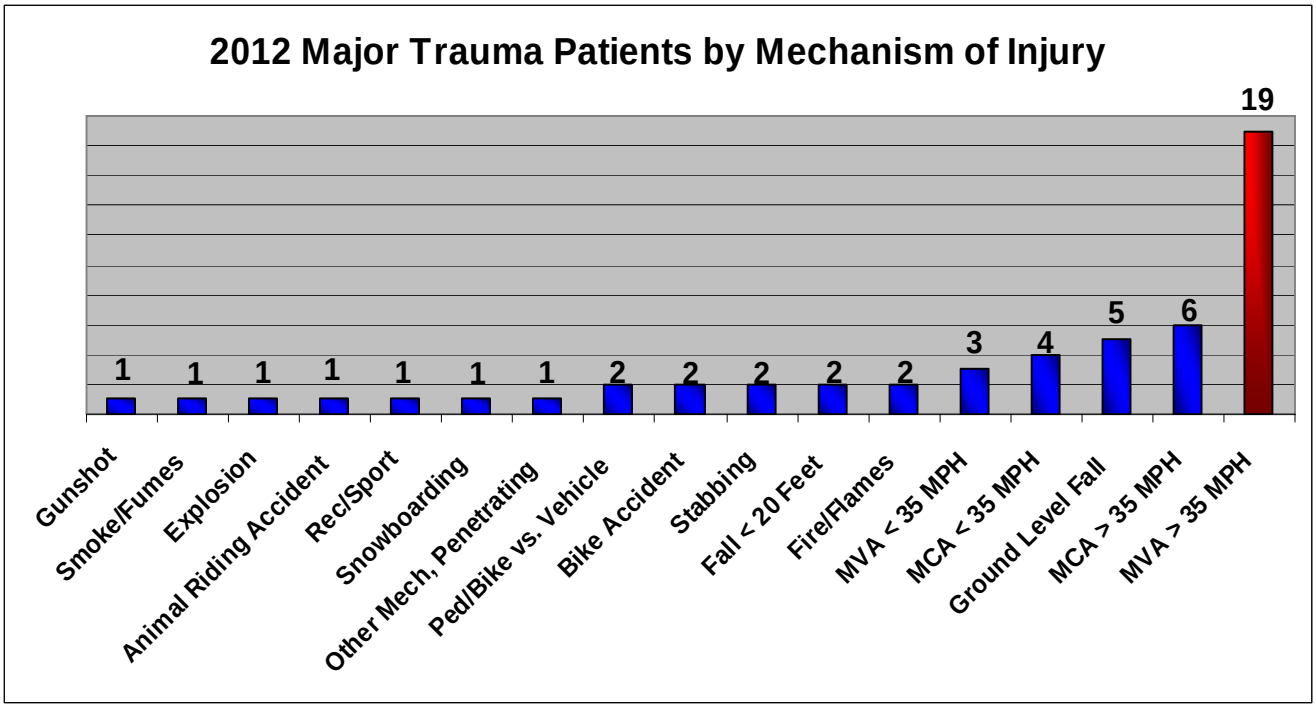
2012 EMS Demographics

Patients greater than 64 years of age account for approximately 49% of ambulance patients. Males comprise 47% of ambulance patients and 53% are females.

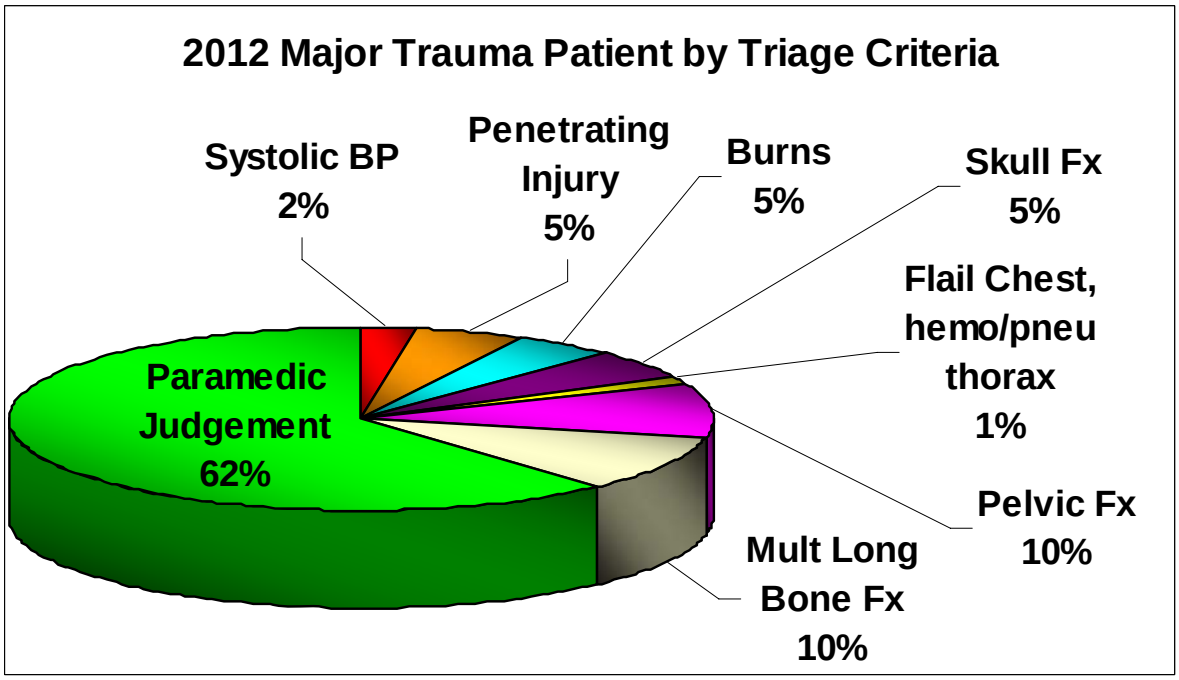


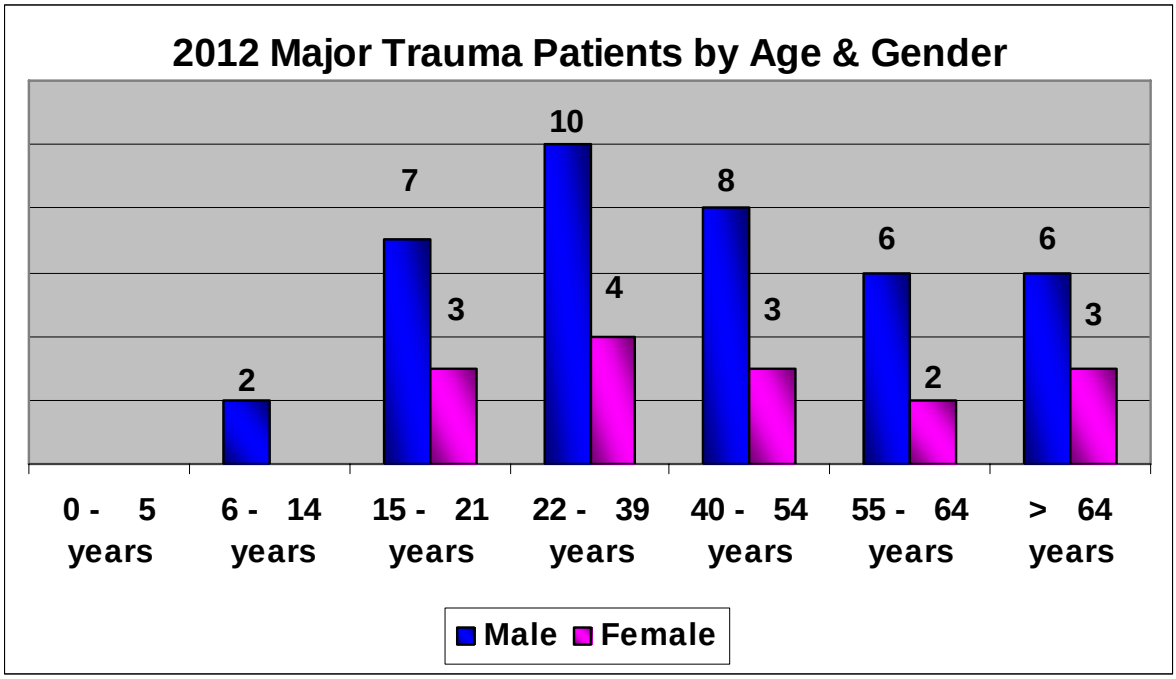
TRAUMA SYSTEM

The chart below shows the mechanism of injury for major trauma victims in Tuolumne County in 2012.

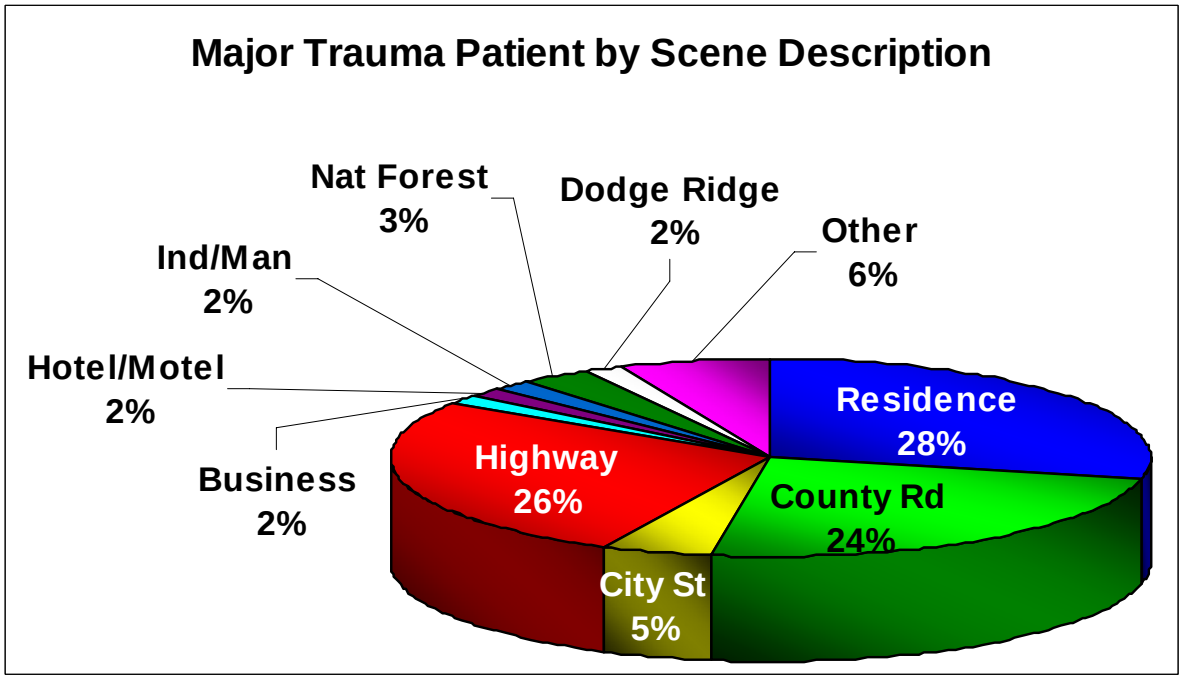


The Tuolumne County Trauma Plan has defined ten separate trauma triage criteria. The criteria are designed to categorize those trauma patients with an increased risk of mortality and morbidity due to their injuries. Paramedic judgment was the criteria used 62% of the time.



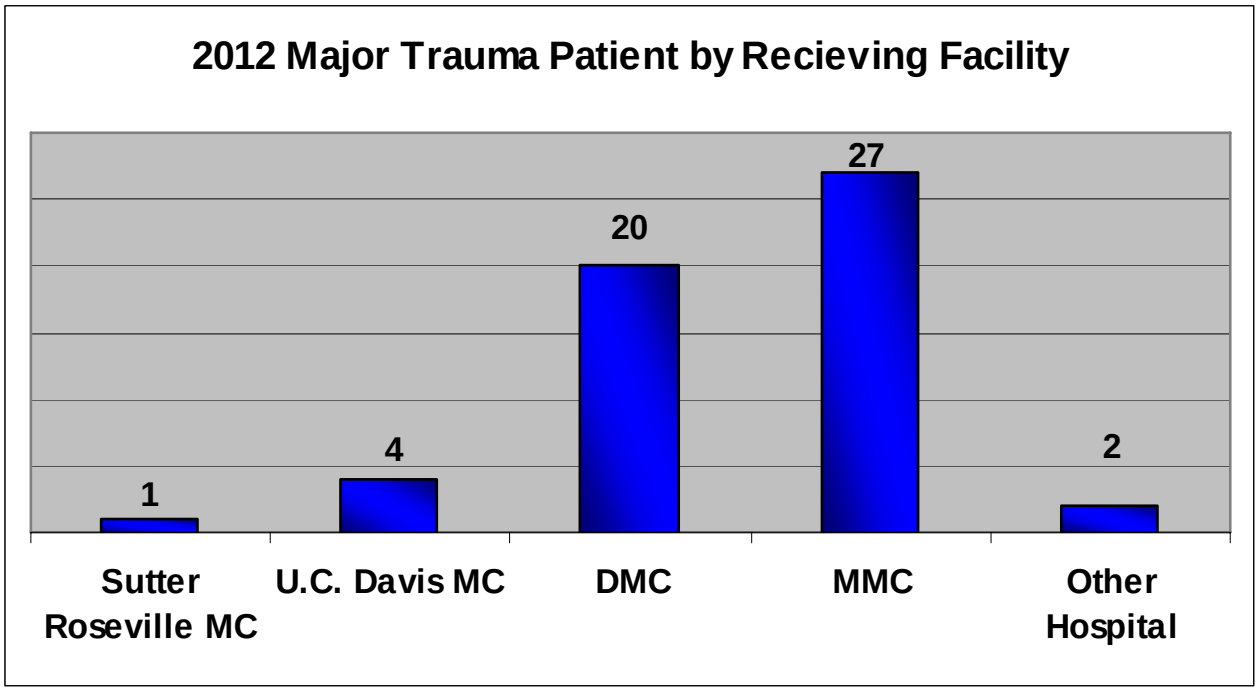


Males comprise 74% of all major trauma patients.

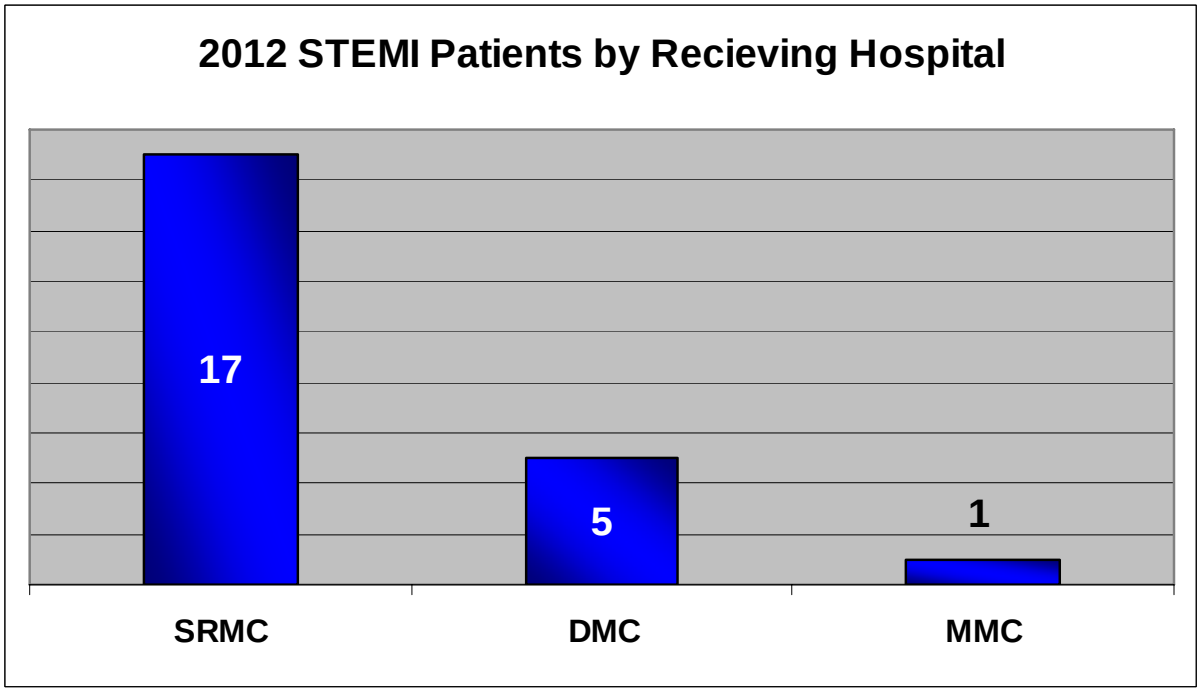


The Tuolumne County Trauma Plan has identified three major trauma patient destinations.

1. Doctors Medical Center (adult)
2. Memorial Medical Center (adult)
3. U.C. Davis Medical Center (adult & pediatric)



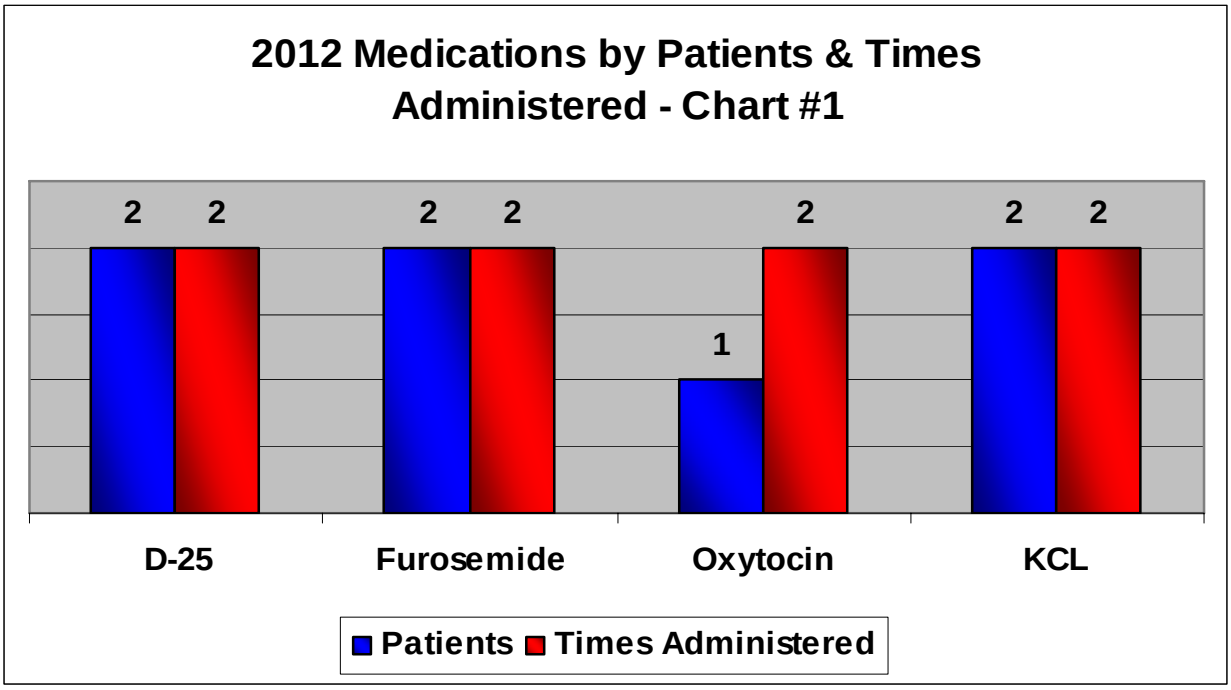
S-T Elevation Myocardial Infarction (STEMI)

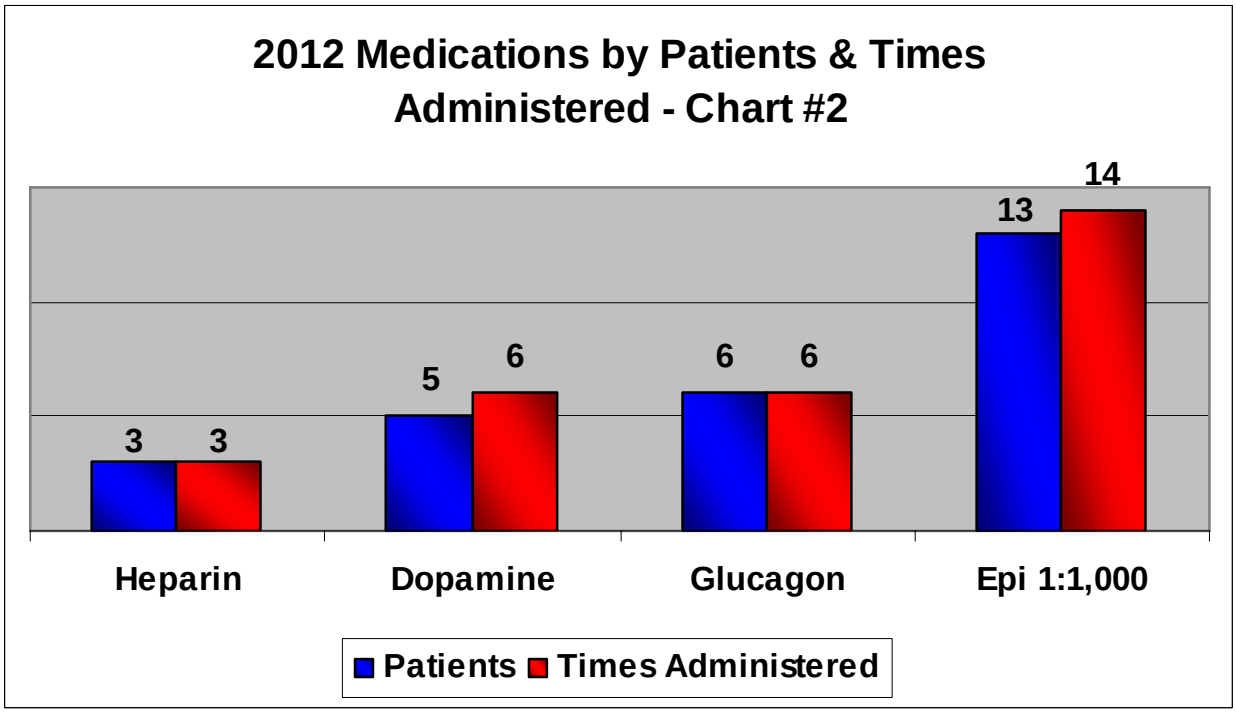


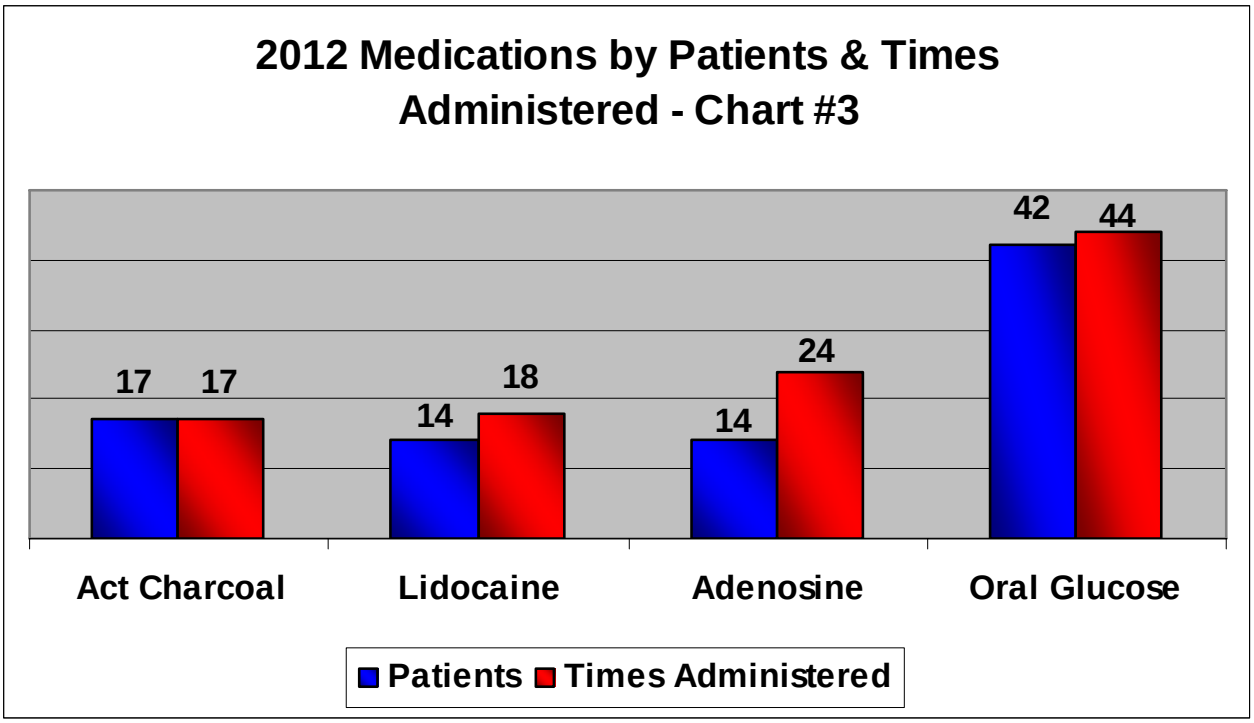
In 2012, 23 patients met the STEMI triage criteria; 17 of them were transported to SRMC by ground ambulance, the remainders were transported by air ambulance to Doctors Medical Center and Memorial Medical Center. Males comprised 64% of STEMI patients, 36% female. Average age is 67 years (66 year for males, 70 years for females).

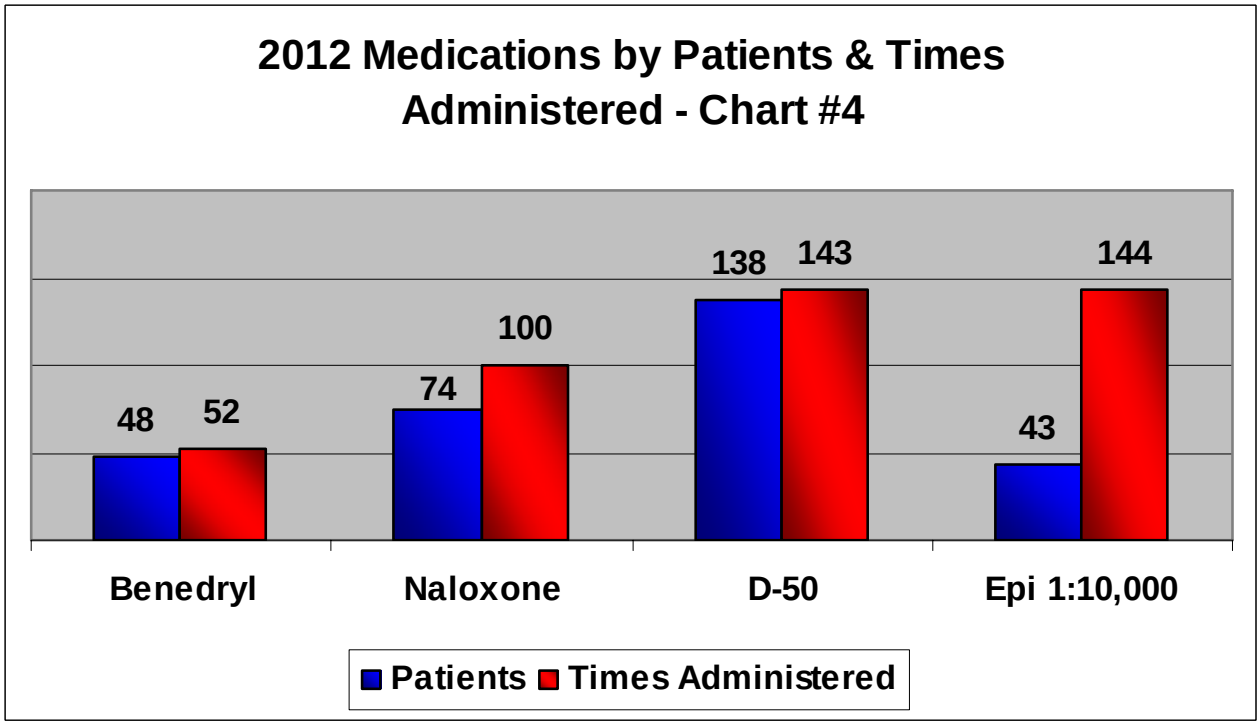
ALS MEDICATIONS

The charts below represent the number of times a medication was administered and how many patients received the medication.

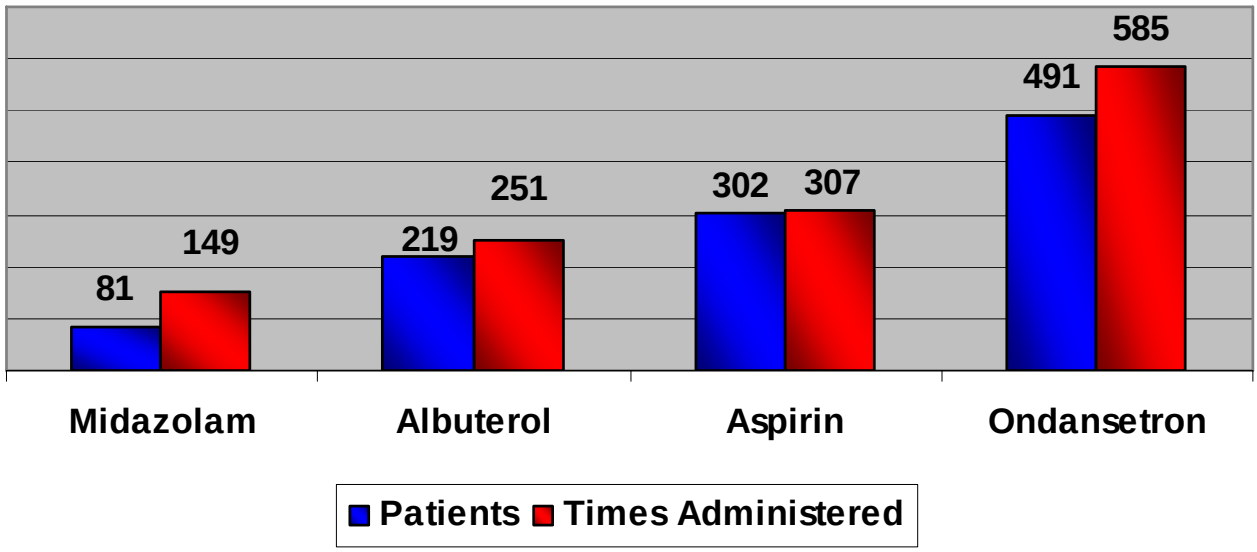




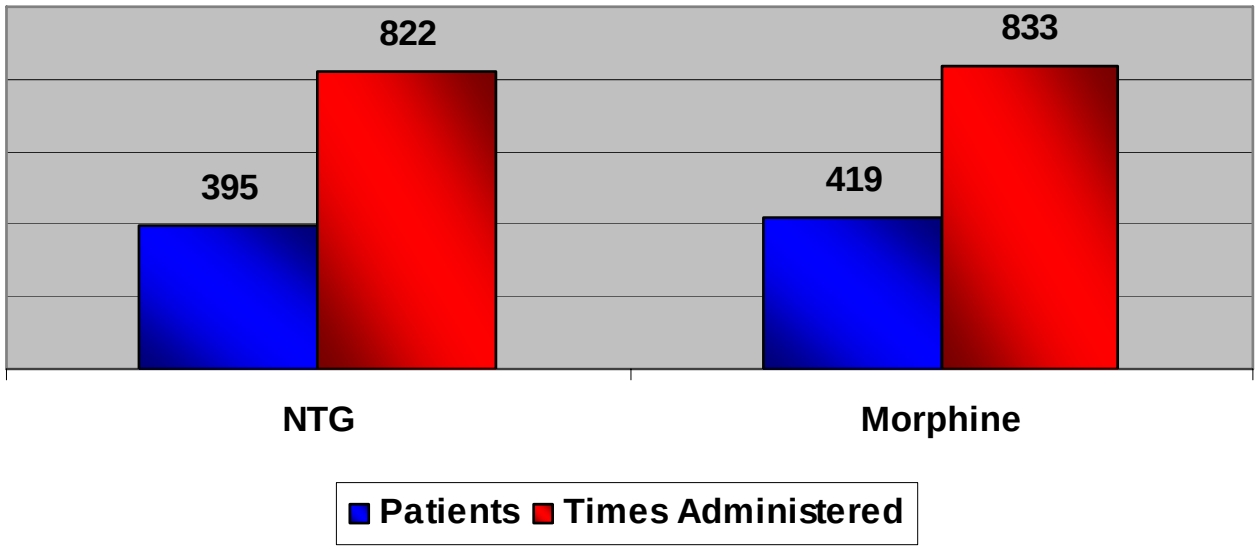

2012 Medications by Patients & Times Administered - Chart #3
17
17
14
18
14
24
42
44
Act Charcoal
Lidocaine
Adenosine
Oral Glucose
Patients
Times Administered


2012 Medications by Patients & Times Administered - Chart #4
48
52
74
100
138
143
43
144
Benedryl
Naloxone
D-50
Epi 1:10,000
Patients
Times Administered

2012 Medications by Patients & Times Administered - Chart #5

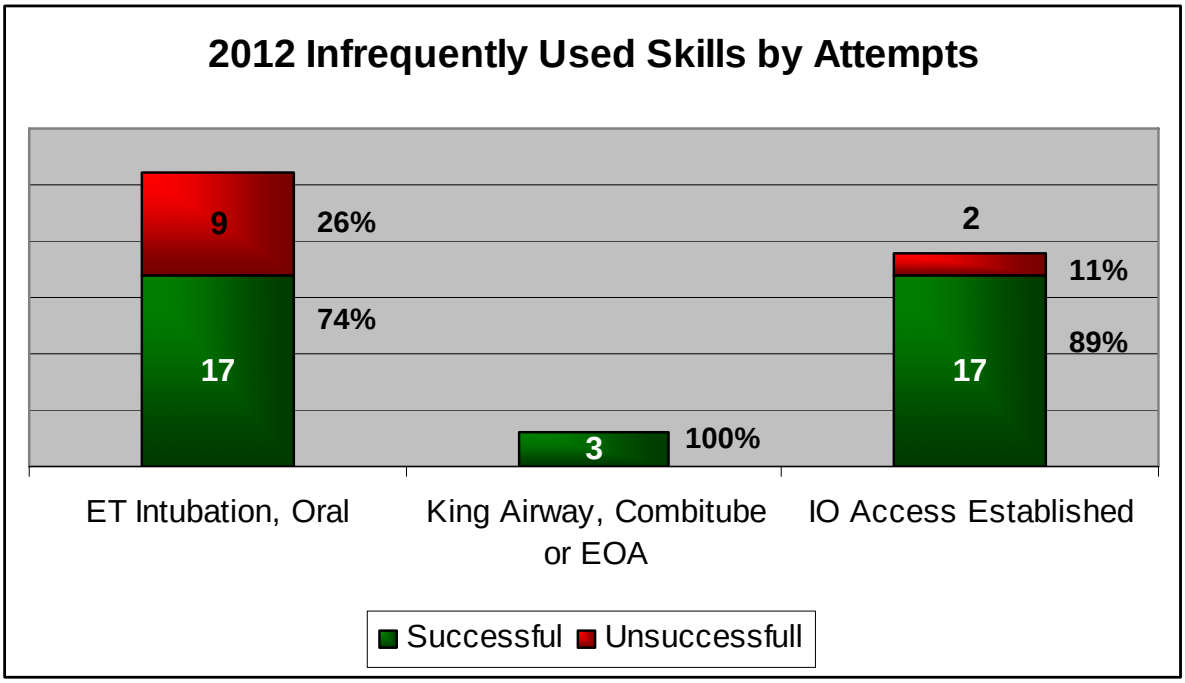


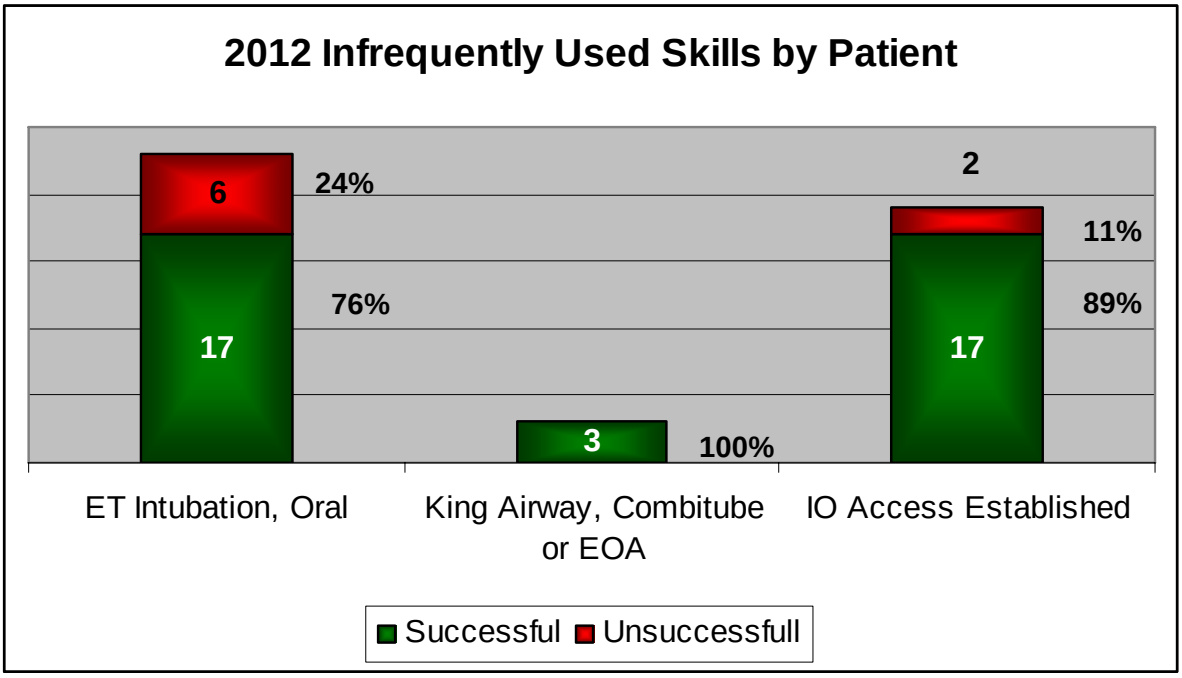
2012 Medications by Patients & Times Administered - Chart #6



ALS INFREQUENTLY USED SKILLS

The data on Infrequently Used Skills shows that 76% of the patients that ET intubations were attempt were successfully intubated. Of these patients, half (3 of 6) had a backup advanced airway (EOA, Combitube or King Airway) successfully placed on the first attempt; the remainder were successfully managed with a BLS airway.





SUMMARY

I would like to thank Tuolumne County Ambulance Service, and Sonora Regional Medical Center for providing the data that made this report possible. I would also like to thank all of the First Response Agencies for the excellent service they provide to the County of Tuolumne.

The Tuolumne County EMS System remains a strong asset to the County, its citizens and visitors. The eleven-year trend shows a general increase in calls for EMS service, particularly along the Highway 108 corridor.

With the passage of the Patient Protection and Affordable Care Act (ACA) many new questions and challenges face the Tuolumne County EMS System. According to Mike Williams of the Abaris Group, by 2019 there will be 39 million newly insured person in the U.S. (43% Medi-Cal/Medicaid, 57% insurance exchange); however there will be $716 billion in Medicare cuts. Although Mr. Williams does not expect a drastic increase in EMS and Emergency Department (ED) utilization, the shift in the payor mix may adversely impact many EMS systems.

Innovative hospital and EMS systems have implemented programs to decrease unnecessary ambulance and hospital utilization and decrease costs. REMSA, Reno NV, has created community health intervention teams to decrease ambulance use and hospital admissions; this program is expected to save over $750,000 in it first three years. Prosser Public Hospital District, Prosser WA, has implemented a Community Paramedic program; anticipated saving for the first three years is $385,383. University EMS (Buffalo, NY), Upper San Juan Health Services District (CO) and MedStar (TX) have all implemented innovative solutions to increase efficiencies and decrease costs.

The extension of the Medicare “Super Rural add-on” through 2013 will provide some short term stability; making the “Super Rural add-on” permanent would allow long term stability to our system. The implementation of AB 678 which became California’s Ground Emergency Medical Transport (GEMT) program may also provide additional revenue for our system. The GEMT program would allow ambulance services operated by governmental agencies to submit invoices for reimbursement of costs not covered by Medi-Cal.

The changing environment of the upcoming years will afford us many opportunities and challenges to improve the EMS System. The decreasing reimbursement for services rendered and increasing costs will provide many challenges to the County of Tuolumne, maintenance and expansion of the EMS system should be one of the top priorities of the County.